MILTON B. LENNON, M. D. (380 Post Street, San Francisco)—As Orbison says, a careful classification of the psychoneuroses is important: We recall years ago when the diagnosis of neurasthenia was as common as it is today relatively rare. The same pertains with psychaesthenia. Hysteria, perhaps, is now more frequently recognized than it was a decade ago. With the development of our knowledge, the glandular discrepancies, toxic and infectious conditions, the so-called constitutional inferiorities and mild psychic state, have claimed many patients who formerly were designated as psychaesthenic or neurasthenic. It has been the observation of many of us that such classification had better be made with great reserve. A mild manic-depressive state with complete recovery and a later turbulent episode will often point out an error in diagnosis. An early encephalities may run on for months with all the marks of a neurasthenia, before any defining symptoms supervene. The same can be said of other toxic conditions. These, it is true, can activate a neurasthenia, but the fatigability that they present does not constitute a neurasthenia. The psychoneuroses—if they represent anything—represent definite types of personality. They are an expression of the inherent, inborn nature of given groups of individuals. Under obvious stresses—either mental or physical—symptoms may arise which are distressing, even to incapacity: Others, however, have no such obvious symptoms and can only be reached by careful analysis.

If we bear this in mind we must be very chary of using the term "cure" in any patient with a psychoneurosis; much less can we use the term "permanent cure." Quite plainly can we get rid of distressing symptoms and, perhaps, that is as much as can be asked. The method may be in any of the accredited ways which will do for the happiness and efficiency of the individual.

Doctor Orbison's method is particularly efficacious, since it implies the co-operation of doctor, patient and trainer. It spells out-of-doors, well-regulated exercise and a direction toward healthy habits. It has the advantage of restoring the patient with a laudable degree of rapidity.

The personal equation of the doctor, however, must not be overlooked. Undoubtedly, this has played a large part in the obtaining of such excellent results.

DOCTOR ORBISON (closing)—The discussions of my paper by Doctors Wright, Eaton and Lennon have, in themselves, a remarkably ponderable value—coming, as they do, from neuro-psychiatrists eminently qualified by education and experience to express critical judgments upon the subject under discussion.

In fact they bring out exactly the values of the training camp method and make a better summing up of those values qualitatively than I could expect to do. For example, Dr. Wright has crystallized one whole phase of the subject in a single sentence when he says, "Occupational therapy should not be just a time-killer, but should have the elments of interest, physical hardening and zest of accomplishment of something hitherto not believed possible by the patient."

Again, Doctor Eaton, from a very large experience, is able to state the formulations that: "Obviously one must start with the patient as he is"; we attempt to reach the level of physical and mental normality for that individual. All such training should be founded upon the laws of physiology and psychology, "plus the patient's intelligent co-operation." I know of Doctor Eaton's admirable work at Stockbridge and the notable results obtained.

Doctor Lennon, with his well-known accuracy in analysis, sums up admirably when he says, "The psychoneuroses, if they represent anything, represent definite types of personality. They are an expression of the inherent, inborn nature of given groups of individuals."

I can do no better in closing this discussion than by quoting these careful and experienced neuro-psychiatrists. That they indorse what has seemed to me very simple, but common sense, definite method of treating the psychoneuroses, and concur in its efficacy is very much appreciated, as is the quality of their illuminating discussion.

CORONARY OBSTRUCTION

By JAMES F. CHURCHILL, M. D., *San Diego*

Sudden obstruction of a coronary vessel is ordinarily due to a thrombus, but an embolus is occasionally found.

Treatment consists in absolute rest in bed, morphin for relief of the pain and the use of digitalis.

Vasodilators are contra-indicated, since there is already a fall in blood pressure.

DISCUSSION *by William J. Kerr, San Francisco; F. F. Gundrum, Sacramento; Egerton Crispin, Los Angeles; Franklin R. Nuzum, Santa Barbara.*

OBSTRUCTION of the coronary arteries has long been regarded as one of the most serious of cardiac accidents. Indeed, until as recently as 1881 it was considered a fatal one. In that year Cohnheim published his conclusions that the coronaries were end arteries and that occlusion of one of them or one of the larger branches was followed by death within a few moments. This work confirmed that of earlier writers, but did not long remain unchallenged. Numerous workers from 1888 to 1910 published the results of animal experiments, in which death was delayed for some time, and even recovery was noted in a few instances. Clinical observations with necropsy findings also began to be reported during this period, furnishing proof that patients can and do survive for varying lengths of time obstruction of fairly large branches of the coronary vessels.

The object of this review of the subject is to emphasize the relative frequency of coronary occlusion, to point out the variations in the clinical picture, and to discuss some points in differential diagnosis. Immediate recognition and treatment of this condition may, in certain instances, mean much to the patient.

Sudden obstruction of a coronary vessel is ordinarily due to a thrombus, but an embolus is occasionally found. Either artery or any one of their branches may be involved, the most common site being the ramus descendens of the left. That the coronaries are not end arteries, as was formerly taught, was definitely proven by Fred M. Smith, whose excellent work on coronary anastomosis was published in 1918. After infusing the coronary vessels, Smith injected them with a suspension of barium and made stereoscopic films of the hearts, showing in this way not only the presence of actual anastomoses, but also the variation in the size and numbers of these in different hearts.

The result of an obstruction depends upon the size of the vessel affected, the number and size of the anastomoses and the previous pathological state of the myocardium.

In discussing the symptomatology of this affection, one cannot do better than to adopt the classification made by Herrick in his two classical papers on this subject, published in 1912 and 1919.

1. Cases of instantaneous death in which there is no death struggle.

2. Cases with very severe symptoms, usually of typical anginal character, in which death occurs in from a few minutes to a few hours.

3. Cases with symptoms severe enough to be recognized as serious and probably of cardiac origin, in

which death may be delayed for days and recovery eventually occur.

4. A group in which the cardiac symptoms are very mild and in which the diagnosis can only be suspected, or made in retrospect, from the autopsy findings. It is the third group which will be chiefly considered in this paper.

SYMPTOMATOLOGY

The subjects of this affection are those in which angina is commonly encountered that is, men past 50 years of age, though a few verified cases have been reported in the thirties. Those who have had previous anginal attacks will usually describe the seizure as similar, but more severe and more prolonged. The pain may be substernal or radiate to the arms or to the abdomen. Its intensity may be of any degree, though usually very severe.

Symptoms of collapse quickly follow the onset. The pulse is usually weak and rapid and may become irregular, premature systoles being the most common type of arrhythmia. The heart tones are faint, and there is almost always a rapid fall in blood pressure. The face is usually ashen. Profuse perspiration is common. Dyspnoea is not often noted, though it may occur and be accompanied by the appearance of many bubbling rales and the expectoration of frothy, pink sputum, indicative of pulmonary edema. It has been suggested that this edema may occur when the left, and not the right, ventricle is affected.

Nausea and vomiting are not uncommon, and when associated with severe abdominal pain may be very confusing and suggestive of an abdominal condition. Engorgement of the liver and edema of the lower extremities are described, due to a weakened myocardium; but these findings are less common than those mentioned above.

Extreme weakness is the rule, though some patients remain surprisingly strong and may insist upon walking about the room, going to the toilet, etc. The majority of patients prefer to lie flat in bed, but two of my own cases were apparently more comfortable when upright and persisted in sitting in a chair.

A pericardial rub may develop at any time after a few hours, and when found is of great diagnostic importance. It is commonly stated that the mind remains clear almost to the moment of death, and while these patients ordinarily realize the gravity of their condition the fear of death, so commonly described in angina, is noticeably absent.

DIAGNOSIS

The diagnostic points which have led me to suspect coronary occlusion are:

1. Severe persisting pain of anginal type, which is *not* relieved by vasodilators, but only by morphin.
2. Signs of shock as mentioned above, especially the rapid fall in blood pressure.
3. Weakening, irregular heart tones.
4. Pericardial rub.
5. Electrocardiagraphic findings.

A majority of the reported cases show in the electrocardiagram a sharply negative T wave and a decrease in the amplitude of the QRS group. Unfortunately, the electrocardiagraph is not portable, so that one is not often available as an aid in the diagnosis. However, when the findings above mentioned are obtained, they should be regarded as strongly supporting evidence of coronary obstruction.

DIFFERENTIAL DIAGNOSIS

The two conditions which commonly come in for consideration in the differential diagnosis are uncomplicated angina and acute lesions of the upper abdomen.

The former of these is relatively easy of differentiation, inasmuch as the pain in angina, while it may be as severe, is not so lasting and is usually relieved by nitroglycerin or amyl nitrite. Further, there are not present the marked signs of collapse, especially the weakened heart tones and rapid fall in blood pressure. Of course, those anginal attacks, which are immediately fatal, can only be differentiated at autopsy.

The second group, however, presents many difficulties, and an error may occasionally be unavoidable. Perforation of a gastric or duodenal ulcer, acute pancreatitis, mesenteric thrombosis, and biliary colic may be simulated by a coronary occlusion in every detail for a period of several hours. While the pain in coronary obstruction is more often substernal, it may be referred to the epigastrium, and when to this is added board-like rigidity of the upper abdomen, vomiting and signs of collapse, the patient presents a typical picture of perforation of a hollow viscus. The situation is particularly difficult if there chances to be a former history of digestive disturbances. Differential diagnosis may not be possible for several hours, and it may be necessary to await further developments before a final decision is made. Increasing weakness and rapidity of the heart, or the development of an arrhythmia or a pericardial rub on the one hand, or the appearance of further signs of an abdominal lesion on the other, will usually aid in the differentiation.

As stated before, cases of coronary obstruction show very great variation in their clinical pictures. The following three case histories serve to illustrate and emphasize this fact.

CASE 1—A man of 76 was seen in consultation after having been in intense agony for four hours. There was a history of previous anginal attacks. The pain was substernal, agonizing in character and did not radiate. No relief had been afforded by nitroglycerin, and morphin had been administered with partial, but not complete, relief. The heart tones were feeble. The blood pressure could not be taken on account of the restlessness of the patient. Death occurred about seven hours after the onset. Autopsy showed advanced sclerosis of the coronaries and a soft thrombus in the left main branch. A typical case of the pure anginal type in which a diagnosis may be made with considerable certainty.

CASE 2—A man of 78 who had been very active, a great traveler, and who prided himself on his good health. No history of previous angina or other cardiac symptoms. On the morning of the onset he felt some nausea while at his breakfast. He went at once to his room and vomited a small amount, after which he stated he felt relieved, but not entirely comfortable. There was no pain at this time, however. My associate saw this patient within an hour after the onset. When he entered the room the man set up on the bed to relate his history. At the end of about five minutes he uttered an exclamation, clasped his hands on his abdomen and fell back on the bed. He almost immediately vomited, but

experienced no relief from his intense pain, which he located in the epigastrium. His color became ashen, profuse prespiration appeared, his pulse became rapid and weak. It was learned that, a few months before, his systolic blood pressure had been 145. Four hours after the onset his pressure was 95-60, and he presented the typical picture of shock. While the abdominal pain and rigidity still persisted at this time the signs of cardiac disturbance were so marked that the possibility of a perforated ulcer was dismissed by the surgical consultant and myself. He lived twenty hours from the onset of his severe symptoms. At the end of fourteen hours general weakness was extreme, the heart was very rapid and irregular, and the systolic pressure had fallen to approximately 60, while the abdominal rigidity had disappeared. At the onset this case closely simulated the picture of rupture of a gastric or duodenal ulcer. Although an autopsy was not obtainable, those of us who watched the case felt that coronary obstruction was the only possible diagnosis.

CASE 3—Was a man of 72 who came to the office this winter on account of recurring discomfort under the upper sternum. This had been noted after exercise for about two months and was thought by the patient to be due to "gas." On this account he had developed a marked aerophagia. He was found to have an advanced arteriosclerosis and some increase in the cardiac outlines. The heart tones were clear. The blood pressure was 155-100. He was advised to remain quietly in his room for several days. The second morning after I was asked to see him on account of the same distress. It had come on at about 9 p. m., had been continuous, and he had spent a sleepless night in a chair. The pain was described both as a pressure and a dull pain under the middle third of the sternum; was apparently not very severe and did not radiate. His distress was increased by lying down. On that day the blood pressure was found to be 112-70. His color was grayish and he was in a profuse prespiration. The next morning a faint pericordial rub was heard in the third left interspace near the sternum. His condition remained practically unchanged and relief was only obtained by morphin. On the third day the pressure had dropped to 90-45. The heart was rapid, occasional premature systoles were noted, but there was no change in the heart outlines. He was a very uncontrollable patient and insisted upon going to the bathroom contrary to instructions. He died suddenly on the morning of the fifth day, after returning from the toilet. On the basis of his persistent cardiac pain, pericardial rub, fall in blood pressure, and disturbed rhythm, the diagnosis was made of obstruction of one of the coronary branches. Autopsy could not be obtained.

The point I wish to impress by these three case histories is that there is no single symptom complex typical of coronary thrombus. These three cases present entirely different clinical pictures of what I believe to have been the same pathological lesion.

TREATMENT

The treatment consists in absolute rest in bed, morphin for relief of the pain, and the use of digitalis. Vasodilators are contra-indicated, since there is already a fall in blood pressure. If the patient survives he should be kept in bed over a long period and treated as any other individual with grave myocardial disease.

Electric Building.

DISCUSSION

WILLIAM J. KERR (University of California Hospital, San Francisco)—It has been a pleasure to read Doctor Churchill's paper on "Coronary Obstruction." The description of the symptomatology and physical findings fits in very well with my own experience with this clinical entity. I think all of those who have handled patients with coronary disease have been impressed with the type of pain which the patients describe, being of an anginal type, but persistent and agonizing in character and not relieved by the ordinary vasodilators. Patients who present the more severe forms of coronary disease, with the associated myocardial changes, give a very striking picture of shock with fall in blood pressure, pallor and profuse sweating. The changes in the heart sounds are also very striking, with marked weakening of the tone of the first sound. The pericardial rub, which Doctor Churchill mentions, is not very frequently observed, but quite a percentage of cases show at necropsy pericardial involvement. Electrocardiograph findings are not constant, but usually show evidence of disturbance of the conduction system in the ventricles and abnormal T waves. The gastro-intestinal symptoms may be very prominent and suggest conditions in the abdomen of a very severe type and may even result in surgical measures, which naturally are of no value and may result fatally.

It was of interest to review the pathological findings in such cases and to learn that many patients show evidence of previous coronary occlusion with fibrosis of heart muscle resulting from this occlusion. This is ample evidence that patients may go through mild attacks of coronary occlusion and recover in many instances without having experienced any symptoms in the past history which would lead one to make such a diagnosis.

I quite agree with Churchill in regard to the treatment in these cases. Rest is the most important single factor with relief from pain by the use of opiates. A long period of rest is absolutely indicated. There is great danger of embolism as a result of mural thrombosis.

F. F. GUNDRUM, M. D. (Capital National Bank Building, Sacramento)—Doctor Churchill's paper brings back to our attention a medical accident which, though not extremely common, is, nevertheless, possibly considerably less rare than we ordinarily suppose. It is not always met with in old men, but may occur in women, and even in comparatively young women. I have attended a woman who died of coronary occlusion at the age of 42. The diagnosis was confirmed by autopsy. The source of the thrombus was not determined. It is of first importance that coronary occlusion be not mistaken for some of the acute surgical accidents of the upper abdomen. This mistake is less apt to occur if opportunity for a case history presents itself. The history taking may be difficult at a time when the patient is extremely uncomfortable and sick and the family much excited and anxious. Hasty surgery has here such melancholy results, however, that time spent upon a thorough investigation into the patient's previous health is well spent. There is also very rarely a true muscle spasm of the abdominal wall, which is so frequently present after perforation of a viscus high up in the abdomen. I agree with Churchill that there are possibly more sufferers from coronary occlusion than are so diagnosed and particularly there are a fair number whose lesion is sufficiently limited that they recover to a fair amount of activity for a time.

EGERTON CRISPIN, M. D. (Pacific Mutual Building, Los Angeles)—Doctor Churchill's paper is a well prepared presentation of a subject that must frequently be brought before the profession in order than anginal symptoms may be more often clinically segregated into relationship with the probable pathologic origin. The established proof that coronary arteries are not end arteries, the recent clinical observations of the surgeons, after cutting the superior cardiac nerve for the relief of spasmodic type of anginal pains, and the correlation of careful autopsy findings with the clinical observations of pain attacks, have helped in gathering together a group of symptoms that strongly suggest coronary obstruction as their cause.

Nearly all observers agree in the main symptoms; particularly the prolonged type of pain; falling pressure; absence of relief from vaso-dilators and the need for morphia. The type of person in whom the attack occurs and the probability of sclerosis in the aorta and in the coronaries, help in suggesting the possible origin of pain. More frequently will the type of pain from coronary involvement occur in epigastrium. Where it occurs substernal the radiation to extremities is less often present. The person with spasmodic type of angina may be gravely ill while under the strain of the fear, or emotion, or anger, that brought on the attack, but feel quite himself the next day. The patient with pain from coronary obstruction is an ill man for whom effort must

be suspended. The infarct or fibrosis may only be put to test with caution until myocardial integrity has been established at effort levels.

Rather typical of the obstructions in group classed as Number 3 by Doctor Churchill, is that these folks may have comparative comfort when effort is within myocardial circulatory limits, and how sure distress comes when these limits are exceeded. With this in mind and impressed upon patients having had symptoms of obstruction, possibly to some extent attacks may be averted. Comparatively one effort level might be cared for with the limited blood of a partially occluded vessel, but all symptoms of obstruction develop if increased effort made demands on coronaries that could not be supplied. This borne in mind may permit some patients with this disease to live longer with some comfort.

FRANKLIN R. NUZUM, M. D. (Santa Barbara)—A complication of coronary obstruction not mentioned in Doctor Churchill's excellent paper is rupture of the heart. This accident has been considered as of rare occurrence, but in certain types of service, such as coroners' examinations and in insane asylums, frequent instances of ruptured heart wall are coming to light. They are noted particularly in coroners' services because sudden death follows the rupture. They are noted in insane asylums because the life of such an individual tends toward the pathologic processes which are found in coronary obstruction and infarction of the myocardium.

I have had personal experience with five instances of ruptured heart, three of which occurred in general hospital practice. The pathology back of each of these instances, and back of some 250 instances that I have found in the literature, is primarily an occlusion of one of the large branches of either the right or left coronary artery, resulting in infarction of the muscle wall. By far the large majority of instances have occurred in the anterior wall of the left ventricle at or near the apex. This area is supplied by the descending branch of the left coronary artery, and an occlusion of this branch or of the arteries supplying the affected area is found when carefully looked for. Rupture of the heart never occurs in a normal muscle wall, and likewise rupture through an old healed infarct has not been recorded.

Death usually follows shortly after the rupture, so that therapy is not of avail, but in going over the history, occasionally a diagnosis of a former occlusion of a coronary artery can be determined. In some instances this preceded by days or weeks the rupture of the heart wall.

Many instances of rupture of the heart wall undoubtedly occur in general hospital practice, which at present are not being diagnosed. A familiarity with the subject of coronary occlusion and an increasing desire on the part of physicians to obtain post mortem examinations routinely will bring to light many such examples.

The importance of absolute rest at the time the diagnosis of coronary occlusion is made, as suggested by Churchill, is most important in preventing rupture of the area of myomalacia cordis, which follows the infarction.

The Spinal Fluid in the New-born, With Especial References to Intracranial Hemorrhages—A study of the spinal fluid of 423 new-born negroes was made by M. Hines Roberts, Atlanta, Georgia (Journal A. M. A.). Each of these fluids contained a yellow pigment, bilirubin, which persisted at least until the ninth day, and was intensified if jaundice occurred. It cleared by the fourth week. The intensity of pigmentation was closely related to the physical development of the infant. Sixty cases, or 14.1 per cent, showed the presence of intracranial hemorrhage, two due to hemorrhagic disease, and fifty-eight to trauma. Abnormal labors or operative procedures tend to increase the incidence of intracranial hemorrhage. Prematurity is a definite etiologic factor. Only twenty-six of the sixty cases presented symptoms attributable to intracranial hemorrhage. Fifty-four of the sixty children have been followed; twelve are dead, ten because of hemorrhage, two as the result of some intercurrent infection. Forty-two children are known to be alive, only two of whom show symptoms due to hemorrhage. The remaining forty seem perfectly normal.

TUBERCULOSIS OF THE SEMINAL TRACT

(From the Department of Urology, Stanford University Medical School)

By JAMES R. DILLON, M. D., *San Francisco*

The only hope of radical cure or complete arrestation of the disease is by the radical operation—that is, excision of the tuberculous seminal tract.

If the patient with unilateral epididymitis is seen early enough there may be hope of removing the entire tuberculous tract while it is still limited to one side, and saving for him the opposite seminal tract.

DISCUSSION *by Martin Molony, San Francisco; R. L. Schulz, Los Angeles; Floyd F. Hatch, Salt Lake City.*

GENITAL TUBERCULOSIS is such a progressive affection, that any method, however radical, which offers a better chance of recovery is worth serious consideration. At the present time conservative treatment by epididymectomy holds the majority opinion because of the generally accepted belief that the primary focus is in the epididymis and that from this the disease quickly spreads to involve the vesicle and prostate, and by removing the epididymis or testicle the secondary focus will subside and improve the chances for the escape of the opposite side. That such a result is not always obtained and that our attempts to cure genital tuberculosis by epididymectomy leave much to be desired is shown by the published statistics of many urologists.

Barney reported the end results of seventy-one cases, stating that of sixty-nine operated on, but twenty-six were seen after unilateral epididymectomy without involvement of the opposite side; twenty-three returned with infection of the second epididymis, and twenty were examined after bilateral operations. Young reports, out of sixty-three patients, only twenty-seven are known to be or have been alive three years or more since admission. Eighteen were not heard from. He further states that the urinary tract was not involved in thirty-nine cases and as these were fairly early cases of tuberculosis of the seminal tract, the result obtained by epididymectomy or castration were very poor. Keyes reported relapse in fifty-three out of eighty-seven cases. The last six years at the Mayo clinic, Hunt reports forty-two out of sixty-six cases having bilateral disease; (twenty-four were bilateral on admittance, sixteen unilateral operations elsewhere and two have since developed opposite epididymitis). Barney reported definite involvement of the prostate and seminal vesicles in seventy-six out of one hundred and one cases examined. Hunt reported fifteen out of sixty-six, and Young 61 per cent bilateral seminal vesiculitis. Keyes states that every case carefully examined showed some congestion of the internal genitals, which he thinks is always tubercular, hence believes that tubercular epididymitis is always an index of general T. B. of the genital organs.

The various interpretations of digital examinations by different urologists offers a very unreliable basis for deciding the primary focus whether in the epididymis or in the upper genital organs, where practically all clinicians admit tuberculosis may be present, but impossible to detect, though the tubercular epididymis is definite. Also the autopsy records cannot offer complete proof because in the